

The opinion in support of the decision being entered today was **not** written for publication and is **not** binding precedent of the Board.

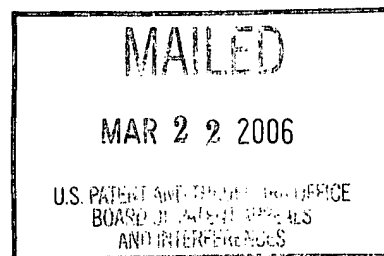
UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES

Ex parte HIROSHI NEMOTO, MICHIO TAKAHASHI and KENSHIN KITOH

Appeal No. 2005-2358
Application No. 10/071,664¹

ON BRIEF



Before PAK, WARREN, and WALTZ, Administrative Patent Judges.

PAK, Administrative Patent Judge.

DECISION ON APPEAL

This is a decision on an appeal from the examiner's refusal to allow claims 1, 11 through 13, 15, 17 and 18. Claims 14, 16 and 19 through 27, the only other claims pending in the subject application, stand withdrawn from consideration by the examiner as being drawn to a non-elected invention. We have jurisdiction pursuant to 35 U.S.C. § 134.

¹Application for patent filed Feb. 8, 2002, entitled, Lithium secondary battery.

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APPEALED SUBJECT MATTER

According to the appellants (Brief, page 7), "[t]he patentability of claims 1, 11-13, 15, 17 and 18 is addressed together herein, and ... claims 1, 11-13, 15, 17 and 18 will stand or fall together." Thus, for purposes of this appeal, we select claim 1 from all the claims on appeal and decide the propriety of the examiner's Section 103 rejection set forth in the Answer based on this claim alone. See 37 CFR § 41.37(c)(1)(vii)(2004). Claim 1 is reproduced below:

1. A lithium secondary battery comprising a negative active material including carbon, and a positive active material including a lithium transition metal compound, said compound being represented by the formula $\text{Li}(\text{Ni}_{x_1}\text{Ti}_{x_2})_z\text{Mn}_{2-z}\text{O}_4$ wherein z is 0.01 to 0.5, $x_1 > 0$, $x_2 > 0$, $x_1 + x_2 = 1$ [sic, $x_1 + x_2 = 1$], and said positive active material has a spinel configuration of the cubic system.

PRIOR ART

The prior art references relied upon by the examiner in support of the Section 103 rejection before us are:

Manev et al. (Manev)	6,040,089	Mar. 21, 2000
Biensan et al. (Biensan)	6,071,645	Jun. 6, 2000

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REJECTION

Claims 1, 11 through 13, 15, 17 and 18 stand rejected under 35 U.S.C. § 103 as unpatentable over the combined disclosures of Manev and Biensan.

DISCUSSION

We have carefully reviewed the claims, specification and prior art, including all of the evidence and arguments advanced by both the examiner and the appellants in support of their respective positions. This review has led us to conclude that the examiner's Section 103 rejection is well founded. Accordingly, we affirm the examiner's Section 103 rejection. Our reasons for this determination follow.

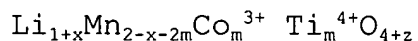
We initially note that the appellants do not dispute the examiner's determination that:

[I]t would have been obvious to one skilled in the art at the time of the invention was made to use the specific carbon negative active material of Biensan et al in the lithium secondary battery of Maneve et al because Biensan et al teach that a negative electrode comprising an electrochemically active material such as carbon is suitable for use in lithium rechargeable cells [and] because [the] carbon material can reversibly intercalate lithium ions into its structure. (Compare the Answer, page 7, with the Brief and the Reply Brief in their entirety.)

Rather, the appellants take the position that the examiner has not established a prima facie case of obviousness regarding the claimed subject matter because substantial evidence does not support the examiner's finding that Manev would have suggested employing the claimed positive active material in its lithium secondary battery. See the Brief, pages 7-9 and the Reply Brief, pages 1-4. We will not subscribe to the appellants' position.

As correctly found by the examiner (the Answer, page 4), Manev teaches a positive electrode material containing a multiple-doped lithium manganese metal oxide for secondary lithium and lithium-ion cells. See the abstract and column 2, lines 8-11. The examiner finds (the Answer, pages 5-6), and the appellants do not dispute (the Brief, pages 7-9 and the Reply Brief, pages 1-4), that Manev teaches at column 2, lines 55-61, lithium manganese metal oxide

codoped with equivalent amounts of Co^{3+} and Ti^{4+} to form a spinel material having a composition described by the formula:



wherein X and m are molar parts with numbers between 0 and 0.2 and Z is a number between -0.1 and 0.2.

The appellants do not dispute that this formula also encompasses the claimed formula, except for employing cobalt (Co^{3+}), in lieu of nickel which is known to be in the same transitional metal Group VIII in the Mendeleev periodic chart. Compare the Answer in its entirety with the Brief and the Reply Brief in their entirety. We find that Manev goes on to state (column 4, lines 39-62, emphasis added) that:

Although the codopant combination of cobalt and titanium is described as a preferred embodiment for use in the invention, various other combinations can be used in accordance with the invention. For example, combinations of aluminum, cobalt, chromium, copper, iron, gallium, magnesium, nickel, germanium, molybdenum, niobium, titanium, vanadium and tungsten **such as** aluminum/titanium, gallium/titanium, nickel/titanium, iron/titanium, chromium/titanium, cobalt/vanadium, aluminum/vanadium, magnesium/vanadium, gallium/vanadium, nickel/vanadium, iron/vanadium, chromium/vanadium, cobalt/molybdenum, aluminum/molybdenum, gallium/molybdenum, nickel/molybdenum, iron/molybdenum, chromium/molybdenum, cobalt/germanium, aluminum/germanium, magnesium/germanium, gallium/germanium, nickel/germanium, iron/germanium, chromium/germanium, cobalt/nickel/vanadium, magnesium/germanium/vanadium, aluminum/cobalt/titanium, aluminum/titanium/molybdenum, aluminum/cobalt/molybdenum, nickel/titanium/molybdenum, cobalt/nickel/titanium/vanadium, cobalt/nickel/titanium/molybdenum, and cobalt/nickel/aluminum/titanium/vanadium, can be used to produce multiple doped lithium manganese oxide spinels which meet the above formula in accordance with the invention.

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The codopant combination of nickel and titanium is one of the thirty-four co-dopant combinations specifically named. Id.

Given the limited number of the specifically named codopant combinations and the closeness between cobalt and nickel, we concur with the examiner that one of ordinary skill in the art would have been led to employ co-dopant combinations, such as cobalt/titanium and nickel/titanium, in lithium manganese metal oxide to form a spinel structure useful for the positive electrode material of the lithium secondary battery of the type described in Manev. See also Merck & Co. v. Biocraft Laboratories Inc., 874 F.2d 804, 807, 10 USPQ2d 1843, 1846 (Fed. Cir.), cert. denied, 493 U.S. 975 (1989).

The appellants also argue that any inference of obviousness is rebutted by a showing of unexpected results. See the Brief, pages 9-10 and the Reply Brief pages 4-5. In support of their argument, the appellants refer to a declaration executed by Michio Takahashi, one of the inventors in the subject application, under 37 CFR § 1.132 (hereinafter referred to as the "Takahashi declaration") and examples at pages 22 through 29 (results shown in Table 1 at page 24) of the specification. See, e.g., the Reply Brief, pages 4-5 and the declaration, page 3. Having reviewed the showing in the Takahashi declaration and the

specification, we determine that the appellants have not demonstrated that the claimed subject matter as a whole imparts unexpected results. In re Klosak, 455 F.2d 1077, 1080, 173 USPQ 14, 16 (CCPA 1972) (The appellants have the burden of showing that the claimed subject matter imparts unexpected results.); In re Heyna, 360 F.2d 222, 228, 149 USPQ 692, 697 (CCPA 1966) ("It is incumbent upon appellants to submit clear and convincing evidence to support their allegation of unexpected property.").

As correctly pointed out by the examiner (the Answer, page 12), "the objective evidence of nonobviousness is not commensurate in scope with the instant claims..." The coin cells supposedly representative of the claimed invention referred to in the Takahashi declaration and the specification are limited to employing a positive electrode made of specific amounts of lithium and manganese components and specific amounts of acetylene black powder and polyvinylidene fluoride under a pressure of 300 kg/cm² and an electrolyte formed of dissolved LiPF₆ in a specific organic solvent. Although these exemplified coin cells appear to show some improvement in internal resistance ratios, the appellants have not provided any evidence, much less any explanation, as to why this limited showing is sufficient to support, for example, the multifarious positive electrodes made

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of materially different amounts of the lithium and manganese components and materially different additional components included in the claims on appeal. This is especially true in this case since the appellants' own specification indicates that the amounts of lithium and manganese components used, as well as the presence or absence of other components, affect the internal resistance ratios of the claimed lithium secondary batteries. See the examples at pages 22 through 29 of the specification. Thus, it cannot be said that the appellants have carried their burden of showing that the claimed subject matter as **a whole** imparts unexpected results, thereby rebutting the prima facie case established by the examiner.

Based on the totality of record, including due consideration of the appellants' arguments and evidence, we determine that the preponderance of evidence weighs most heavily in favor of obviousness within the meaning of Section 103(a). Accordingly, we affirm the examiner's decision rejecting claims 1, 11 through 13, 15, 17 and 18 under 35 U.S.C. § 103 as unpatentable over the combined disclosures of Manev and Biensan.

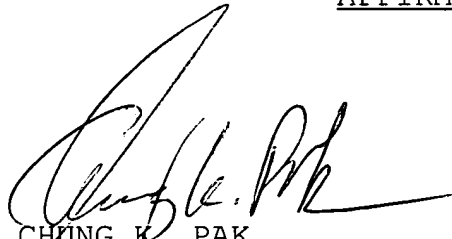
CONCLUSION

In view of the foregoing, the decision of the examiner is affirmed.

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No time period for taking any subsequent action in
connection with this appeal may be extended under 37 CFR
§ 1.136(a).

AFFIRMED



CHUNG K. PAK)
Administrative Patent Judge)



CHARLES F. WARREN)
Administrative Patent Judge)



THOMAS A. WALTZ)
Administrative Patent Judge)

BOARD OF PATENT
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